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First Named Inventor

Art Unit

Examiner

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Attwood et al.**

Serial No.: **09/503,608**

Filed: **February 11, 2000**

For: **Technique of Defending
Against Network Flooding Attacks
Using a Connectionless Protocol**

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Group Art Unit: **2134**

Examiner: **Ellen C. Tran**

Attorney Docket No.: **RSW00-0010**

36736

PATENT TRADEMARK OFFICE
CUSTOMER NUMBER

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a Notice of Appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application: Attwood et al.	§	
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Serial No.: 09/503,608	§	Group Art Unit: 2134
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Filed: February 11, 2000	§	Examiner: Ellen C. Tran
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For: Technique of Defending Against	§	Attorney Docket No.: RSW00-0010
Network Flooding Attacks Using a	§	
Connectionless Protocol	§	

Commissioner for Patents
P.O. Box 1450
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**REASONS IN SUPPORT OF APPLICANTS' PRE-APPEAL
BRIEF REQUEST FOR REVIEW**

Sir:

This document is submitted in support of the Pre-Appeal Brief Request for Review filed concurrently with a Notice of Appeal in compliance with 37 C.F.R. 41.31 and with the rules set out in the OG of July 12, 2005 for the New Appeal Brief Conference Pilot Program.

No fees are believed to be required. If, however, any fees are required, I authorize the Commissioner to charge these fees which may be required to IBM Corporation Deposit Account No. 09-0461.

A one month extension of time is believed to be necessary. I authorize the Commissioner to charge the one month extension fee of \$120.00 to Yee & Associates, P.C. Deposit Account No. 50-3157. No additional extension of time is believed to be necessary. If, however, an additional extension of time is required, the extension is requested, and I authorize the Commissioner to charge any fees for this extension to Yee & Associates, P.C. Deposit Account No. 50-3157.

REMARKS

Applicants hereby request a Pre-Appeal Brief Review (hereinafter "Request") of the claims finally rejected in the Final Office Action mailed October 20, 2006, as the rejections are clearly in error. The Request is provided herewith in accordance with the rules set out in the OG dated July 12, 2005.

I. Response to Rejection

Applicants address the rejection of claim 1. The Examiner rejects claim 1 as anticipated by *Schuba et al.*, Network Protection for Denial of Service Attacks, U.S. Patent 6,725,378 (April 20, 2004) (hereinafter "*Schuba*"). This rejection is clearly in error. Regarding this rejection the examiner states, in part, that:

"if the number of connectionless; datagrams already queued to the port from the host exceeds a prescribed threshold discarding the datagram, if the number of connectionless datagrams already queued to the port from the host exceeds the prescribed threshold" is taught in '378 col. 4, lines 54-58 "There is a limit on the number of concurrent TCP connections that can be in a half-open connection state, called the SYN-RECVD state (i.e., SYN received). When the maximum number of half-open connections per port is reached, TCP discards all new incoming connections requests";

Final office action of October 20, 2006, p. 5.

Claim 1 is as follows:

1. A method of preventing a flooding attack on a network server in which a large number of connectionless datagrams are received for queuing to a port on the network server, comprising:
 - determining, in response to the arrival of a connectionless datagram from a host for a port on the network server, if the number of connectionless datagrams already queued to the port from the host exceeds a prescribed threshold;
 - discarding the datagram, if the number of connectionless datagram already queued to the port from the host exceeds the prescribed threshold; and
 - queuing the connectionless datagram to a queue slot of the port, if the number of connectionless datagram already queued to the port from the host does not exceed the prescribed threshold.

Schuba does not anticipate claim 1 because *Schuba* does not teach the claimed steps of determining, discarding, and queuing, as claimed. *Schuba* does not teach these claimed steps because a *half-open connection*, as in *Schuba*, is not the same as a queue of *datagrams*, as in claim 1. As acknowledged by the examiner (see above quote), *Schuba* teaches discarding *half open connections* until the maximum number of *half-open connections* is reduced. Nevertheless, the examiner asserts that discarding datagrams queued at a port, as claimed, has the same meaning as discarding too many half-open connections, as in *Schuba*. See the Final office action of October 20, 2006, pp. 3-4.

However, several important differences exist between discarding additional connection requests, as in *Schuba*, and discarding the datagram, if the number of connectionless datagrams already queued to the port from the host exceeds the prescribed threshold, as recited in claim 1. For example, in *Schuba*, no queue for the datagrams themselves has been described. Instead, *Schuba* refers to a *half-open backlog queue*. See *Schuba*, col. 11, ll. 16-26.

In contrast, claim 1 requires “discarding the **datagram**, if the number of connectionless datagrams already queued to the port from the host exceeds the prescribed threshold” (emphasis supplied). One of ordinary skill would instantly recognize the difference between discarding a *datagram* queued at a port and removing *connections* from a half-open backlog queue. A half-open connection is not a datagram, even if a half-open connection is created using datagrams. *Schuba* only teaches methods for dealing with too many half-open connections, which is entirely distinct from discarding datagrams queued at a port. The fact that half-open connections are created with connectionless datagrams is wholly irrelevant to this distinction. Therefore, *Schuba* does not anticipate claim 1.

II. Refutation of Examiner’s Response

In response to the above facts, the examiner states, in part, that:

In response to applicant's argument on page 8, "Schuba only teaches methods for dealing with too many half-open connection, which entirely distinct from discarding datagrams queued at a port . . . The thrust of Applicants argument is not directed towards splitting fine hairs over the meaning of the term "connectionless" or the meaning of the term "queuing the connectionless datagram.

The thrust of Applicants' arguments is that a fundamental and marked difference exist between a queue of connectionless datagrams at a port, as claimed, and a queue of half-open connections, as described in *Schuba*. The Office disagrees with argument to establish a connection the standard TCP/IP three-way handshake must occur, that is how a connection is established. TCP/IP transfers connectionless datagrams. Discarding datagrams queued at a port, when there are too many half open-connections is the same meaning. Note to queue a port is to start communication, which can be termed a half open-connection.

Final office action of October 20, 2006, pp. 3-4.

The examiner asserts that discarding datagrams queued at a port is the same as discarding too many half open connections because a TCP/IP connection requires a three-way handshake and in TCP/IP transfer of connectionless datagrams occur. However, the examiner's response ignores the fact that a queue of half-open connections, as in *Schuba*, is still fundamentally different than a queue of connectionless datagrams, as in claim 1. The examiner's assertion to the contrary is plainly wrong. For example, one of ordinary skill knows that:

A half-open connection refers to a TCP connection that is partially open.

The TCP protocol has a three state system for opening a connection. First, the originating site (A) sends a SYN packet to the destination (B). A is now half-open, and awaiting a response. B now updates its kernel information to indicate the incoming connection from A, and sends out a request to open a channel back (the SYN/ACK packet).

At this point, B is now "half-open" (it has sufficient information to receive packets, but not enough to send packets back). Note that B was put into this state by another machine, outside of B's control.

en.wikipedia.org/wiki/Half-open_connection

Thus, once a computer receives a SYN packet, the computer is in a half-open state. In a half open state the computer updates its kernel information to indicate the incoming connection from a remote computer. The computer has sufficient information to receive, but not send packets. However, the computer is not accumulating a queue of datagrams. Instead, the computer can, *via the kernel*, accumulate a number of these half-

open states in which the computer is anticipating *future* datagrams. *Schuba* discusses discarding queues of these half-open connections. Thus, *Schuba* inherently teaches issuing a command to a kernel to discard *half open connections*. Claim 1 requires discarding *connectionless datagrams*, themselves, which is an entirely different thing. These two techniques are manifestly different from each other.

To further illustrate the distinction, *Schuba* can receive ten SYN datagrams and, as a result, establish ten half-open connections. *Schuba* then decides that ten half-open connections is too many, so *Schuba* teaches discarding some of those ten half-open connections. The datagrams used to open the half-open connections *are not discarded*. In stark contrast, claim 1 requires discarding connectionless datagrams themselves. Thus, if a computer is receiving too many datagrams, then the *datagrams* are discarded, not the half-opened connections, as in *Schuba*.

Therefore, the examiner's assertions that *Schuba* teaches features equivalent to those in claim 1 is manifestly incorrect. Accordingly, *Shuba* does not teach the features of claim 1. Therefore *Schuba* does not anticipate claim 1. For this reason, the rejections should be withdrawn. Applicants further request that the claims be allowed.

The Pre-Appeal Brief Conference Panel is invited to call the undersigned at the below-listed telephone number if in the opinion of the Panel such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: January 25, 2007

Respectfully submitted,

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